Paper No. 23

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte STEPHEN FORBES, STUART F. BROWN,
CHRISTOPHER D. HAYES and KULBINDER S. KULAR

Appeal No. 1999-2775
Application No. 08/549,847

ON BRIEF

Before ABRAMS, FRANKFORT, and GONZALES, Administrative Patent Judges.

FRANKFORT, Administrative Patent Judge.

DECISION ON APPEAL

This is a decision on appeal from the examiner's refusal to allow claims 1, 2 and 5 through 7 as amended subsequent to the final rejection in a paper filed October 26, 1998 (Paper No. 17) and from the examiner’s final rejection of claims 13 through 17. Claims 1, 2, 5 through 7 and 13 through 17 are all of the claims remaining in the application. Claims 3, 4 and 8 through 12 have been canceled.

Appellants' invention relates to an apparatus for sanding or polishing a surface wherein the apparatus includes means for directing a cold gas flow (e.g., at -20°C or lower) onto the surface to be treated, characterized in that the means for directing the cold gas flow comprises a compressed gas line having a vortex tube. An adequate understanding of the invention can be had from a reading of independent claims 1 and 13, a copy of which, as reproduced from the Appendix to appellants' brief, is appended to this decision.

The prior art references of record relied upon by the examiner as evidence of obviousness of the claimed subject matter are:

Peter	4,333,754	Jun. 8, 1982
Lubbering et al. (Lubbering '242)	5,088,242	Feb. 18, 1992

Vortec Catalog, "Vortex tubes" pp. 1-5 (1992).

Claims 1, 2, 5 through 7 and 13 through 17 stand rejected under 35 U.S.C. § 103 as being unpatentable over Lubbering '242 in view of Peter or the Vortec Catalog.

Rather than reiterate the conflicting viewpoints advanced by the examiner and appellants regarding the above-noted rejection,

we refer to the examiner's answer (Paper No. 22, mailed April 12, 1999) and to appellants' brief (Paper No. 21, filed February 1, 1999) for a full exposition thereof.

OPINION

At the outset, we observe that appellants, on page 4 of their brief, have provided three groupings of the claims before us on appeal, i.e., Group 1: claims 1 and 5 through 7; Group 2: claims 13 and 15 through 17; and Group 3: claims 2 and 14. Thus, in accordance with 37 CFR § 1.192(c)(7), we have selected claims 1, 13 and 2 as being representative of the respective claim groupings and will decide this appeal on the basis of those claims alone.

Having carefully reviewed the obviousness issues raised in this appeal in light of the record before us, we have come to the conclusion that the examiner's rejection of the appealed claims under 35 U.S.C. § 103 should be sustained with regard to claims 13 and 15 through 17, but not with regard to claims 1, 2, 5 through 7 and 14. Our reasoning in support of these determinations follows.

Looking first to the broader independent claim 13, we note that this claim sets forth an apparatus for sanding or polishing a surface, wherein the apparatus comprises a motor (1) including a body and a working head (2) mounted on said body, said working head including means for attachment of an abrasive or polishing material (5) to said working head; a feed line means for directing a cold gas flow to the surface to be treated; and means for feeding a cold gas flow to the feed line means comprising a vortex tube (8) adjacent said working head and a compressed gas line (18), said vortex tube having an outlet opening communicating with said feed line means, and having an inlet end connected to said compressed gas line. Like the examiner, we observe that Lubbering '242 discloses an apparatus similar to that set forth in claim 13 on appeal, with the exception that Lubbering '242 does not disclose or teach a means for feeding a cold gas flow to the feed line means (3, 9) therein which comprises "a vortex tube adjacent said working head," as in appellants' claim 13. At column 3, lines 11-13, Lubbering '242 indicates that the term cold gas as used in that patent "refers to a cold air which has been cooled by suitable means to temperatures substantially lower than minus 20° C." Lubbering '242 goes on to indicate that an advantageous way of providing

the cold gas flow is by using liquefied gas, such as liquefied nitrogen, or a mixture of liquefied gas and compressed air (col. 3, lines 13-22).

Peter discloses an assembly for providing a flow of cold air (e.g., minus 40° F) to a workpiece on the bed or table of a drill press, grinder, or milling machine (col. 3, lines 17-18), wherein the apparatus includes a vortex tube assembly (11) having an inlet (23) coupled to a compressed gas line (19) and an outlet (31). According to the examiner, "Peter teaches providing cold gas through the use of a vortex tube which produces cold gas without moving parts or electricity, in which a filter or dryer is used and a chiller or antifreeze injectors (col. 2, lines 5-20)" (answer, page 3). From the combined teachings of Lubbering '242 and Peter the examiner concludes that it would have been obvious to one of ordinary skill in the art at the time appellants' invention was made to utilize the vortex tube type cold gas supply apparatus of Peter as a substitute for the cold gas supply disclosed in Lubbering '242, in order to produce cold gas efficiently and inexpensively.

In the alternative, the examiner notes that the Vortec Catalog teaches using a vortex tube in a cold air gun to cool

machinery and surfaces in grinding applications, and concludes based on the teachings of Lubbering '242 and the Vortec catalog that it would have been obvious to one of ordinary skill in the art at the time the invention was made to replace the cold air supply arrangement in the abrading device of Lubbering '242 with a vortex tube arrangement as taught in the Vortec Catalog, in order to produce cold gas efficiently and inexpensively and to eliminate liquid coolant problems, as noted in the Vortec Catalog (page 4).

Noting that skill is presumed on the part of those versed in the art (see In re Sovish, 769 F.2d 738, 742, 226 USPQ 771, 774 (Fed. Cir. 1985)), we are in agreement with the examiner's conclusion that one of ordinary skill in the art at the time of appellants' invention would have found it obvious to utilize the known vortex tube cold air supply exemplified by either Peter or the Vortec Catalog in place of the cold gas supply arrangement (8, etc.) seen in Lubbering '242, so as to gain the known advantages of the simple, lightweight, compact, relatively inexpensive and maintenance free vortex tube cold gas supply apparatus and to eliminate problems associated with use of a liquid coolant. While it is true that neither Peter nor the

Vortec catalog expressly teaches the use of a vortex tube assembly in a polishing device like that of Lubbering '242, it is our view that such would have been clearly suggested by the applied references, given the teaching in both Peter and the Vortec Catalog of using a vortex tube cold gas supply apparatus in a grinder (Peter, col. 3, line 17) and for improving finish

and maintaining tighter tolerances in milling, drilling and grinding operations without part contamination (Vortec Catalog, page 4). In this regard, it must be borne in mind that where two known alternatives are interchangeable for their desired function, an express suggestion of the desirability of the substitution of one for the other is not needed to render such substitution obvious. See In re Fout, 675 F.2d 297, 301, 213 USPQ 532, 536 (CCPA 1982); In re Siebentritt, 372 F.2d 566, 568, 152 USPQ 618, 619 (CCPA 1967).

We also again note the broad teaching in Lubbering '242 (col. 3, lines 11-13) that the cold gas supply may be "cold air which has been cooled by suitable means to temperatures substantially lower than minus 20° C" (emphasis added). As conceded by appellants (brief, pages 5 and 7), vortex tube cold air supply apparatus is well known and has been widely used in industry, particularly for spot cooling and in enclosure cooling systems since the 1960's. Thus, we consider that one of ordinary skill in the art at the time of appellants' invention would have recognized the vortex tube cold gas supply apparatus of Peter or the Vortec Catalog as being "suitable means" within the context of the broad disclosure in Lubbering '242.

While we have fully considered the arguments advanced by appellants, we are not convinced thereby that the examiner's conclusion of obviousness as it applies to independent claim 13 on appeal is in error. Although appellants point to alleged distinctions between the prior art and their invention based upon use and the problem which the invention solves, we note that it is clear that the purpose proposed as the reason why the artisan would have found the claimed subject matter to have been obvious based on the prior art need not be identical to the purpose or problem which appellants indicate to be the basis for having made the invention in order to establish a prima facie case of obviousness. As long as some reasonable motivation or suggestion to combine the references is provided by the prior art taken as a whole, as we believe there is here, the law does not require that the references be combined for the reasons contemplated by appellants. See In re Beattie, 974 F.2d 1309, 1312, 24 USPQ2d 1040, 1042 (Fed. Cir. 1992); In re Dillion, 919 F.2d 688, 697, 16 USPQ2d 1897, 1905 (Fed. Cir. 1990) and In re Kronig, 539 F.2d 1300, 1304, 190 USPQ 425, 427-28 (CCPA 1976). In addition, the fact that appellants may have recognized an advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the difference would

otherwise have been obvious. See Ex parte Obiaya, 227 USPQ 58, 60 (BPAI 1985), aff'd.mem., 795 F.2d 1017 (Fed. Cir 1986).

Contrary to appellants' position, we do not believe that resort to appellants' own teachings is necessary in order to support the combination of Lubbering '242 and Peter, or Lubbering '242 and the Vortec Catalog. From our viewpoint, hindsight has not been utilized, since only knowledge which was within the level of ordinary skill in the art at the time of appellants' invention has been employed to derive a reasonable suggestion to do what the claimed subject matter encompasses, and thus justify the rejection. For these reasons, we will sustain the examiner's rejection of appellants' claim 13 under 35 U.S.C. § 103.

Given appellants' grouping of the claims (brief, page 4), we also sustain the standing § 103 rejection of dependent claims 15 through 17, since these claims fall with independent claim 13.

As for the examiner's rejection of claims 1, 2, 5 through 7 and 14 under 35 U.S.C. § 103 as being unpatentable over Lubbering '242 in view of Peter or the Vortec Catalog, we are in agreement with appellants position (brief, page 9) that none of the references applied by the examiner teaches or suggests an

apparatus for sanding and polishing comprising a motor including a body and a working head mounted on said body and a vortex tube "mounted on said body" as set forth in independent claim 1 on appeal.[1] Moreover, the applied prior art also does not teach or suggest the particular arrangement of components defined in claims 2 and 14 on appeal, i.e., "a water filter and a chiller unit in series with the vortex tube at the inlet end of said compressed gas line." In this regard, the examiner's reference to column 2, lines 5-20, of Peter is of no avail, since this portion of the prior art patent merely discloses use of a "central air dryer" or alternatively the use of antifreeze injectors, and does not teach or suggest the use of both a water filter/dryer and a chiller unit in series with the vortex tube. Accordingly, the examiner's rejection of independent claim 1 under 35 U.S.C. § 103, and of claims 2 and 5 through 7 which depend therefrom, will not be sustained. Likewise, the examiner's rejection of claim 14 under 35 U.S.C. § 103 based on the collective teachings of Lubbering '242 and Peter or the Vortec Catalog will not be sustained.

[1] It does not appear that appellants have shown the subject matter defined in claim 1 on appeal, including a vortex tube mounted on the motor body, in the drawings of the present application. As set forth in 37 CFR § 1.83(a), the drawing "must show every feature of the invention specified in the claims."

In summary: the decision of the examiner to reject claims 13 and 15 through 17 under 35 U.S.C. § 103 based on the collective teachings of Lubbering '242 and Peter or the Vortec Catalog is affirmed, while the examiner's decision to reject claims 1, 2, 5 through 7 and 14 on the same statutory basis is reversed. Accordingly, the decision of the examiner is affirmed-in-part.

No period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED-IN-PART

NEAL E. ABRAMS Administrative Patent Judge	)
CHARLES E. FRANKFORT Administrative Patent Judge	) BOARD OF PATENT APPEALS AND INTERFERENCES
JOHN F. GONZALES Administrative Patent Judge	)

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Appendix

1. An apparatus for sanding or polishing a surface comprising:
a motor including a body and a working head which is mounted on said body for sanding/polishing movement relative to said body and to the surface to be treated, said working head including means for attachment of an abrasive or polishing material to said working head,
feed line means for directing a cold gas flow through said body and working head to the surface to be treated, and
means for feeding a cold gas flow to the feed line means comprising a compressed gas line, and a vortex tube mounted on said body, said vortex tube having an outlet opening communicating with said feed line means, and having an inlet end connected to said compressed gas line.

13. An apparatus for sanding or polishing a surface comprising:
a motor including a body and a working head which is mounted on said body for sanding/polishing movement relative to said body and to the surface to be treated, said working head including means for attachment of an abrasive or polishing material to said working head,
a feed line means for directing a cold gas flow to the surface to be treated, and
means for feeding a cold glow to the feed line means comprising a vortex tube adjacent said working head and a compressed gas line, said vortex tube having an outlet opening communicating with said feed line means, and having an inlet end connected to said compressed gas line.

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Prepared: June 6, 2003